

# MANUAL TRAINING AND HOUSEHOLD SCIENCE

IN

HIGH, CONTINUATION, PUBLIC, AND  
SEPARATE SCHOOLS

REGULATIONS FOR THE ESTABLISHMENT AND  
MAINTENANCE OF CLASSES

DESCRIPTION OF PRESCRIBED ACCOMMODATION  
AND EQUIPMENT

REGULATIONS FOR TEACHERS' CERTIFICATES

PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO



ONTARIO  
DEPARTMENT OF EDUCATION

Govt Doc  
Ont  
Ed  
1912  
Cir 3  
cop 2

TORONTO:

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty  
1912



# MANUAL TRAINING AND HOUSEHOLD SCIENCE

IN

HIGH, CONTINUATION, PUBLIC, AND  
SEPARATE SCHOOLS

---

REGULATIONS FOR THE ESTABLISHMENT AND  
MAINTENANCE OF CLASSES  
DESCRIPTION OF PRESCRIBED ACCOMMODATION  
AND EQUIPMENT  
REGULATIONS FOR TEACHERS' CERTIFICATES

---

PRINTED BY ORDER OF  
THE LEGISLATIVE ASSEMBLY OF ONTARIO

---



ONTARIO  
DEPARTMENT OF EDUCATION

TORONTO:

Printed and Published by L. K. CAMERON, Printer to the King's Most Excellent Majesty

1912.

Printed by  
WILLIAM BRIGGS,  
29-37 Richmond Street West,  
TORONTO.

Govt Doc  
Ont  
Ed  
1912  
Cir 3  
cop 2

## CONTENTS

---

### I. General Regulations for the Establishment and Maintenance of Classes in Household Science and Manual Training.

|                    |   |
|--------------------|---|
| Introductory ..... | 5 |
|--------------------|---|

#### Day Classes.

|                                          |   |
|------------------------------------------|---|
| Qualifications of Staffs .....           | 6 |
| Organization .....                       | 6 |
| Site, Accommodations, and Plans .....    | 6 |
| Equipment .....                          | 6 |
| Distribution of Legislative Grants ..... | 7 |

#### Evening Classes.

|                                          |   |
|------------------------------------------|---|
| Conditions of Establishment .....        | 9 |
| Sessions .....                           | 9 |
| Qualifications of Staffs .....           | 9 |
| Distribution of Legislative Grants ..... | 9 |

#### General Regulations.

### II. Description of Accommodations and Equipment for Household Science.

#### Accommodations.

|                                      |    |
|--------------------------------------|----|
| School Kitchen .....                 | 11 |
| Dining Room .....                    | 12 |
| Sewing Room .....                    | 12 |
| Laundry .....                        | 12 |
| Cloak Rooms and Lavatories .....     | 12 |
| Heating .....                        | 12 |
| Lighting .....                       | 12 |
| Ventilation .....                    | 12 |
| Blackboards .....                    | 13 |
| An Apartment or Suite of Rooms ..... | 13 |

#### Equipment.

|                                  |    |
|----------------------------------|----|
| Tables .....                     | 13 |
| Seats .....                      | 14 |
| Stoves and Ranges .....          | 14 |
| Sinks and Plumbing .....         | 15 |
| Kitchen Utensils .....           | 15 |
| For Scientific Experiments ..... | 18 |
| Dining Room .....                | 18 |
| Sewing Room .....                | 19 |
| Laundry .....                    | 20 |
| Home Nursing .....               | 21 |
| Emergency Cabinet .....          | 22 |
| Illustrative Material .....      | 22 |
| Library .....                    | 22 |

### III. Description of Accommodations and Equipment for Manual Training.

#### Accommodations.

|                                       |    |
|---------------------------------------|----|
| Wood-working Shop .....               | 23 |
| Forge Shop .....                      | 24 |
| Machine Shop .....                    | 24 |
| Combined Forge and Machine Shop ..... | 25 |
| Blackboards .....                     | 25 |
| Cloak Rooms and Lavatories .....      | 25 |
| Emergency Cabinet .....               | 25 |
| Teachers' Room .....                  | 25 |
| Heating .....                         | 26 |
| Ventilation .....                     | 26 |

#### Equipment.

##### For the lower Forms of the Public Schools.

|                      |    |
|----------------------|----|
| Paper Work .....     | 26 |
| Cardboard Work ..... | 26 |
| Knife Work .....     | 26 |

##### For the higher Forms of the Public, High, and Continuation Schools.

|                                       |    |
|---------------------------------------|----|
| Wood-working Benches .....            | 26 |
| Wood-turning .....                    | 28 |
| Metal-working Benches .....           | 29 |
| Glue and Stain Benches .....          | 29 |
| Forge Shop .....                      | 29 |
| Machine Shop .....                    | 29 |
| Combined Forge and Machine Shop ..... | 31 |
| Illustrative Material .....           | 31 |
| Library .....                         | 31 |

### IV. Special Regulations for the Establishment and Maintenance of Household Science Classes in Village and Rural Schools.

|                                                          |    |
|----------------------------------------------------------|----|
| Establishment, Maintenance, and Legislative Grants ..... | 32 |
| Accommodations .....                                     | 32 |
| Equipment .....                                          | 33 |

### V. Regulations for the Establishment and Maintenance of Elementary Manual Training Classes in certain Village and Rural Schools.

|                                                          |    |
|----------------------------------------------------------|----|
| Establishment, Maintenance, and Legislative Grants ..... | 36 |
| Accommodations .....                                     | 36 |
| Equipment .....                                          | 37 |

### VI. Teachers' Courses and Certificates in Manual Training and Household Science.

|                                                                                    |    |
|------------------------------------------------------------------------------------|----|
| Elementary Courses and Certificates in Manual Training and Household Science ..... | 38 |
| Interim Ordinary Certificates in Household Science .....                           | 38 |
| Interim Specialists' Certificates in Household Science .....                       | 39 |
| Permanent Certificates in Household Science .....                                  | 39 |
| Interim Ordinary Certificates in Manual Training .....                             | 39 |
| Interim Specialists' Certificates in Manual Training .....                         | 39 |
| Permanent Certificates in Manual Training .....                                    | 39 |
| Value of Certificates in Household Science and Manual Training ..                  | 40 |
| Exemptions .....                                                                   | 40 |
| Instructions and Regulations .....                                                 | 40 |

# MANUAL TRAINING AND HOUSEHOLD SCIENCE

## I. GENERAL REGULATIONS FOR THE ESTABLISHMENT AND MAINTENANCE OF CLASSES

### INTRODUCTORY

Vocational education includes all forms of education which fit for useful callings. In the Industrial Education Act and the Regulations of the Ontario Department of Education, the name "technical" is applied to schools and classes for the preparation of foremen and forewomen and the holders of minor directive positions in the trades and other industries; the name "industrial," to schools and classes which meet the needs of manual workers in the trades and other industries, including the occupations of girls and women. In the technical and industrial schools and classes, except where subjects like English literature, for example, are added for purely cultural purposes, all the subjects of the courses have an industrial aim, and all the schooltime of the pupils is devoted to them. Manual Training and Household Science, on the other hand, are regular subjects of a modern Public or High School general course; they form a necessary part of the liberal education which every boy and girl should receive. Like the other subjects of such a course, they are cultural, but they are also especially practical. For each of them provision in school is usually not more than two hours or an hour and a half a week, whereas, in industrial and technical courses the workshop practice needs from three to five half days a week, according to the subject and the stage. Moreover, while introductory to technical and industrial courses, Manual Training and Household Science are neither technical nor industrial themselves. And lastly, whereas the classes in Manual Training and Household Science are directly controlled by the School Boards, the industrial and technical schools and classes are managed by specially constituted Advisory Industrial Committees and are only indirectly controlled by the School Boards. The foregoing distinctions are important and should be borne in mind.

The Manual Training and Household Science courses begin in the Kindergarten and are continued throughout all the forms of the Public Schools and the Lower Schools of the High and Continuation Schools, and the courses in the Fifth Forms and the Lower Schools are organized in accordance with local conditions. After the introductory courses in the lower forms of the Public Schools, courses in wood-working and wood-turning and the associated drawing, and in hand and machine sewing, cookery, and sanitation and hygiene are sufficient for the purposes of a liberal education. The forging and the machine-shop practice, with their associated drawing, which are now generally taken as part of the Manual Training course, properly form part of technical and industrial courses; but, except where comprehensive technical or industrial courses have been established, these subjects are for the present permitted by the Department of Education as extensions of the Manual Training course and are included therein for the purpose of distributing the Legislative Grant.

## DAY CLASSES

Day Classes for Manual Training and Household Science may be established and maintained, under the following regulations, by High, Continuation, Public, or Separate School Boards.

### *Qualification of Staffs*

1. Each member of a staff engaged in teaching Manual Training and Household Science in the High, Public, Separate, and Continuation Schools, herein provided for, shall possess the qualifications prescribed by the Minister of Education.

### *Organization*

2. In addition to the elementary work in Manual Training and Household Science of the lower forms of the Public Schools, Boards may provide courses in woodworking and wood-turning, with the associated drawing, and, with the special approval of the Minister, in the forging and machine-shop practice of Form V of the Public Schools and the Lower School of the High Schools; and in the course in Household Science, the cookery, etc., of the same school grades.

3. (1) There shall not be more than twenty-four pupils under the instruction of one teacher at one time in any of the courses of the higher Forms.

(2) The time apportioned each class in Household Science or Manual Training at each centre shall be not less than an hour and a half a week, except in the case of the work in the lower forms of the Public Schools, when it should not exceed one hour.

(3) The general organization shall be subject to the Minister's approval.

(4) In a form approved by the Minister, a register shall be kept showing the attendance and the work of each pupil; and a stock book containing a list of the equipment, with the cost of the same.

### *Site, Accommodations, and Plans*

4. (1) The site, accommodations, and equipment for Manual Training and Household Science shall be subject to the approval of the Minister.

(2) The plans of every building to be erected or of any room to be adapted for the purpose of Manual Training or Household Science shall be submitted to the Minister of Education and be subject to his approval.

### *Equipment*

5. Subject to the Minister's approval, the term "equipment" shall include any provision specially made for Manual Training and Household Science, as, for example, the tables, work benches, etc., as well as utensils, stoves, benches, tools, forges, lathes, and other apparatus.

6. (1) The minimum equipment for each department of the Manual Training of the higher Forms of the Public Schools and the Lower Schools of the High Schools shall be as follows:—

*Wood-working*: 12 single benches with the necessary tools, and equipment for mechanical drawing.

*Wood-turning*: 3 wood-turning lathes and band or circular saw with the necessary power and tools.

*Ornamental Metal Work*: A complete equipment for elementary work in brass and copper.

*Forging*: 3 forges with anvil and tools.

*Machine-Shop Practice*: 1 engine lathe.  
                                   1 speed lathe. } with accompanying tools.  
                                   6 bench vices. }  
                                   Hack saw (power).  
                                   Drill (power).

(2) The minimum equipment for each department of the Household Science of the higher Forms of the Public Schools and the Lower Schools of the High Schools shall be as follows:—

*Cookery, Sanitation, and Hygiene*: Tables, stoves, and utensils sufficient for the instruction of 12 girls at one time.

*Hand and Machine Sewing*: Two sewing machines with sewing and drafting tables sufficient for the instruction of 12 girls at one time.

*Laundry*: Provision for the instruction of 12 girls at one time in washing, drying, starching, and ironing.

(3) A library shall be selected, with the Minister's approval, to a minimum value of \$50 for Manual Training and Household Science, respectively.

#### *Distribution of Legislative Grants*

7. No grant shall be made for Manual Training unless at least provision has been made for wood-working and the associated drawing; or for Household Science, unless at least provision has been made for sewing, cookery, sanitation, and hygiene.

(1) The Legislative Grants for each centre shall be apportioned as follows:—

(a) An Annual General Grant for Manual Training of \$250 and for Household Science, of \$150.

(b) Twenty per cent. of the annual expenditure for teachers' salaries over \$600, to a maximum of \$200.

(c) (i) For Manual Training, for the first year, 40 per cent. of the value of the equipment to a maximum of \$880; and, for each of the three years following, 20 per cent. to a maximum of \$440.

(ii.) For Household Science, for the first year, 40 per cent. of the value of the equipment to a maximum of \$400; and, for each of the three years following, 20 per cent. to a maximum of \$200.

(iii.) After the fourth year, an Annual Grant of 10 per cent. of the value of the equipment, to a maximum grant in each year for Manual Training, of \$220; and for Household Science, of \$100.

(d) An Annual Grant on the character of the special accommodations for the higher work according to the following scheme of grades:

#### MANUAL TRAINING

|                                          | I       | II     | III    | IV     |
|------------------------------------------|---------|--------|--------|--------|
| Wood-working and Wood-turning Shop ..... | \$10 00 | \$7 50 | \$5 00 | \$2 50 |
| Forge Shop .....                         | 10 00   | 7 50   | 5 00   | 2 50   |
| Machine Shop .....                       | 10 00   | 7 50   | 5 00   | 2 50   |
| Combination Forge and Machine Shop ..... | 15 00   | 11 25  | 7 50   | 3 75   |
| Stock Room .....                         | 5 00    | 3 75   | 2 50   | 1 25   |
| Teachers' Room .....                     | 3 00    | 2 75   | 1 50   | 75     |
| Blackboards .....                        | 2 00    | 1 50   | 1 00   | 50     |
| Lighting .....                           | 2 00    | 1 50   | 1 00   | 50     |
| Heating .....                            | 2 00    | 1 50   | 1 00   | 50     |
| Ventilation .....                        | 2 00    | 1 50   | 1 00   | 50     |
| Cloak Rooms and Lavatories .....         | 4 00    | 3 00   | 2 00   | 1 00   |

#### HOUSEHOLD SCIENCE

|                                       |         |        |        |        |
|---------------------------------------|---------|--------|--------|--------|
| Kitchen .....                         | \$10 00 | \$7 50 | \$5 00 | \$2 50 |
| Pantry, Cupboard, and Storeroom ..... | 5 00    | 3 75   | 2 50   | 1 25   |
| Dining Room .....                     | 10 00   | 7 50   | 5 00   | 2 50   |
| Sewing Room .....                     | 10 00   | 7 50   | 5 00   | 2 50   |
| Teachers' Room .....                  | 3 00    | 2 75   | 1 50   | 75     |
| Blackboards .....                     | 2 00    | 1 50   | 1 00   | 50     |
| Lighting .....                        | 2 00    | 1 50   | 1 00   | 50     |
| Heating .....                         | 2 00    | 1 50   | 1 00   | 50     |
| Ventilation .....                     | 2 00    | 1 50   | 1 00   | 50     |
| Cloak Rooms and Lavatories .....      | 4 00    | 3 00   | 2 00   | 1 00   |

(2) (a) In the distribution of the grant for Manual Training, the maximum recognized value of the equipment for the different departments shall be as follows:—

Wood-work, \$500.  
 Wood-turning, \$300.  
 Forging, \$500.  
 Machine Shop Practice, \$800.  
 Library, \$100.

(b) In the distribution of the grant for Household Science, the maximum recognized value of the equipment for each department of Household Science shall be as follows:—

Cookery, Sanitation, and Hygiene, \$500.  
 Hand and Machine Sewing, \$250.  
 Laundry Work, \$150.  
 Library, \$100.

(3) When the provision for the higher Manual Training or Household Science is less than the time of one teacher for five hours and a half for each of five days a week, the General Grant under (1) (a) above will be correspondingly decreased; when it is greater, it will be correspondingly increased.

(4) No grant shall be paid on the equipment of a Manual Training or Household Science centre in which there has been no class for more than one year.

(5) When an equipment on which the legislative grant has been paid to its full value remains unused for two years the Minister may direct the transfer of said equipment to one of the other centres in the Province.

#### Evening Classes.

1. Evening Classes in Household Science consisting of cookery, sewing, sanitation and hygiene, and in Manual Training consisting of wood-working and wood-turning, with the associated drawing, may be established and maintained under the following regulations, by High, Continuation, Public, or Separate School Boards.

NOTE.—Manual Training and Household Science, as defined in the introduction of this circular, are subjects of the General High and Public School courses of study. They are not intended for workmen and workwomen, and they can be taken only by those who are not on the roll of a Day Public, or High School. [See Public School Reg. 12 (1), and High School Reg. 22 (2).] Where the regulations for the establishment and maintenance of Evening Industrial Classes are complied with, the Advisory Industrial Committee may also admit to them pupils who are not engaged in the trades, but not *vice versa*.

#### *Conditions of Establishment*

2. No such evening class shall be recognized by the Department of Education which has not a total enrollment for each of (a) boys and (b) girls, of at least ten members in regular attendance from the beginning to the end of each term.

NOTE.—Evening classes in forging and machine shop practice, with the associated subjects, when established, should be maintained under the control of Advisory Industrial Committees.

#### *Sessions*

3. (1) The session shall consist of two terms, the first beginning in September and ending the last fortnight in December, and the second beginning the first week in January and ending in April, at dates to be selected by the School Board.

(2) The classes shall be open for at least two hours on each of at least two evenings a week.

#### *Qualifications of Staffs*

4. The teachers of the evening classes shall hold the same qualifications as are prescribed for the teachers of the day classes.

#### *Distribution of Legislative Grants*

5. The Department of Education will pay the following proportions of the total salaries of the staffs of the Household Science and Manual Training Evening Classes:—

In cities with population of 150,000 and over, one-third; in other cities, one-half; in towns, two-thirds; and in villages, five-sixths.

#### GENERAL REGULATIONS

1. As far as practicable, the equipment and accommodations provided for Household Science and Manual Training Day Classes in the Public and the High Schools shall be used for the evening classes in the same subjects.

2. On the report of the Inspector that the equipment or the accommodations are inadequate or unsuitable, or that one or more members of the staff are inefficient or not legally qualified, such reductions may be made in the general grant and in the grants payable upon the equipment, the accommodations, and the salaries of the staff, as the Minister may deem expedient.

3. If in any year the amount voted by the Legislature is insufficient to pay the Grants in full, or if there is a balance over, the Minister may make a *pro rata* reduction or increase.

4. The accounts of the Manual Training and Household Science Departments shall be separately reported each year to the Minister and the legislative grants shall be spent wholly for the purposes of Manual Training and Household Science. The totals of the receipts and expenditures shall, however, also be included in the General Financial Statement of the Board to the Department of Education.

NOTE.—Being regular subjects of the school programme, the cost of establishing and maintaining Manual Training and Household Science classes in the High School shall be provided for in the same way as are the other subjects of the general programme. In apportioning the cost of a High School between the District and the County, the receipts and expenditures for these classes are, accordingly, to be included in the Board's statement. (See High Schools Act, Sections 33-36.)

## II. DESCRIPTION OF ACCOMMODATIONS AND EQUIPMENT FOR HOUSEHOLD SCIENCE

### ACCOMMODATIONS

The following description of Household Science accommodations and equipment applies especially to urban schools, and is *pro tanto* applicable to the provision for industrial and technical classes in cookery, dressmaking, millinery, and laundry work.

*School Kitchen.*—For cooking, a room should be provided which is greater in length than in breadth. One 30 feet by 40 feet accommodates from twenty to twenty-four pupils and allows sufficient space at the sides between the tables and the walls. If the kitchen is in an ordinary school building, the top floor is most desirable, for it allows of better ventilation and prevents the kitchen odours from reaching the other rooms. A basement, if used, should be thoroughly dry and have good light. The wall finish of the kitchen should be washable. The best finish is a dado of tiling with a painted wall above, but, if the cost is too great, the whole wall may be painted. Where a wall is much broken, painted burlap or table oilcloth may be used for the dado. The wall space should also be used for blackboards and cupboards, and the windows and doors should be placed accordingly.\*

The wood-work should be stained rather than painted, or it may be finished in oil. It should be without grooves or projections, as these allow the accumulation of dust. Old woodwork must, of course, be painted.

Tiling makes the best flooring; good hardwood (maple) comes next, but if neither of these can be provided the floor may be painted or covered with inlaid linoleum. In this case the floor should, of course, be planed smooth.

As the school kitchen necessarily differs considerably from the home kitchen, some schools have fitted up a small room adjoining, with the home kitchen equipment of sink, ranges, cupboards, refrigerator, utensils, etc., to give home kitchen practice. Here, sections of two or three girls work under the partial supervision of the teacher.

A store room is desirable as it makes possible the purchase of provisions in larger quantities, thus reducing expense. In this room closed cupboards having shelves of suitable width should be provided. If the

---

\* One of the most attractive school kitchens has been thus described: "The room is large and sunny, being provided on three sides with fourteen large windows, and has a floor space of 30 feet by 50 feet. The artistic effect of the room has been enhanced by a colour scheme of blue, white, cream, and mahogany, to suggest the style of an old Dutch kitchen. The walls are covered to the top of the doors with blue buckram so finished as to be easily cleaned. At the height of the doors a shelf extends around the room. The walls above the shelf and the ceilings are of a deep cream colour. The windows are curtained with cream coloured shades and sash curtains of Russian crash in natural colour edged with blue fringed gimp. The doors and window-frames and shelf are painted ivory white, while the doors and base boards are mahogany colour. On the shelf is an interesting collection of vases, plates, jars, etc., representing the wares of different nations. Three large cupboards with leaded glass doors in Dutch style are built across the corners, and contain china in blue and white and a food museum."

shelves are movable the spaces may be adapted to the varying sizes of their contents. The store room and pantry should be closely adjacent to the kitchen and dining room.

*Dining Room.*—A dining room 12 feet by 16 feet will afford ample space for class work. Too large a dining room is not economical. Here the wall finish, need not be washable. A plate rail should be provided and a few good pictures hung from it. The floor should be of some hardwood, preferably oak, waxed and polished. The dining room should be furnished as much as possible like a home dining room, and should be close to the kitchen in order to avoid delay and waste of time in serving. The whole colour scheme and plan of furnishing should be settled before a start is made, in order that the result may be harmonious and artistic. In some schools the dining room furniture has been made by the advanced classes in Manual Training.

*Sewing Room.*—The earlier work in the sewing course is taken in the grade class rooms at the school desk. Sometimes where the work is taught by the Household Science teacher, the kitchen or dining room is used for the purpose. Where a separate room is provided, it must be well lighted, and, where used for evening classes also, an adjustable drop light should be suspended over each table and machine. Ample blackboard space should also be provided, and sufficient cabinets and cupboards for the storage of material and the work in progress. For fitting, one corner of the room should be provided with a mirror and screened from the rest.

*Laundry.*—A large amount of laundry work may be carried on in the school kitchen. For some years in Ontario this is the most that can be expected. If, however, a Board decides to provide a separate laundry room, it should consult the authorities at the Macdonald Institute, Guelph, or the University of Toronto, which have the best equipped laundries in the Dominion.

*Cloak Rooms and Lavatories.*—Where the pupils in attendance come from a school immediately adjacent, cloak rooms and lavatories may not be needed; but at centres where they come from distant schools, conveniences of the character prescribed under the High School regulations should be provided. Under no circumstances should clothes be hung in the kitchen.

*Heating.*—Generally speaking, the kitchen does not need to be heated to the same temperature as an ordinary class room, for a considerable amount of heat is given off from the cooking. A thermometer should be hung in the room and the temperature kept at about 65 degrees.

*Lighting.*—If the windows are well placed, light from the north may be more evenly distributed than where it is from the south. But sunlight adds to the cheerfulness of the room, and where the light is not from the north, window shades should be provided to regulate it.

*Ventilation.*—The ventilating system must be capable of regulating the temperature and removing the products of combustion and the odours arising from the cooking. To secure this promptly and effectively, the

windows may be utilized, but with caution, as draughts may affect the gas flames and ovens. A simple method of ventilation is to place boards under the lower sash of the windows in order to direct the draught towards the ceiling, or screens of cheese cloth over part of the lower sash space. The chimney may also be used if provided with suitable openings into the flue.

*Blackboards.*—Ample blackboard space should be provided, as written material frequently requires to be preserved from class to class. Slate is to be preferred (See High School Regulations). On one section of the board should be painted a list of all common food material, headed “current prices,” and these prices should be changed by the teacher as the market fluctuates.

*An Apartment or Suite of Rooms.*—The ideal provision for the practical side of the Household Science course is a cottage or suite of rooms. In one city in the Province a cottage formerly used by the caretaker was remodelled and now provides a school kitchen, a home kitchen, a bedroom, a bathroom, and dining-room. It is heated by a hot-air furnace, and so has all the conditions of an ordinary house. This plan is strongly recommended.

#### EQUIPMENT\*

*Tables.*—The arrangement of the work tables will depend on the size and shape of the room, the number to be provided and the position of the windows. The continuous table arranged in rectangular or hollow square form is frequently adopted and has proved satisfactory, especially for small children. There should always be two openings in the continuous table—one facing the blackboard where the teacher usually stands, and the other directly opposite.

Height, minimum 30 inches for children, maximum 32 inches for adults.

Depth, minimum 20 inches for children, maximum 26 inches for adults. At least 24 inches should be allowed as working space for each pupil, but 30 inches or more is desirable.

A working drawing and design of the tables that are supplied to the Normal Schools may be obtained from the Department of Education, Toronto. These, however, should be modified to suit local requirements. Each table is fitted with drawers and shelves or cupboards. Partitions in the drawers allow utensils definite space. These partitions may be movable. For lining, white table oilcloth or wrapping paper may be used, the former being preferable; or the drawers may be shellaced. Shelves or cupboards are placed directly under the drawers for holding large utensils and cleaning materials. Doors to cupboards underneath the table may be hinged at the top or the sides. By far the best arrangement for these cupboards is a roll front, which does away with the inconvenient door and costs very little more. Provision is generally made also for a moulding or baking board under the table top and above the drawers.

---

\*The prices given under this head throughout this circular are only approximate. The Department does not guarantee them.

The table top should project at least one inch to protect the faces of the drawers and cupboards when cleaning. It is best made of maple as this keeps a good colour, is easy to clean, and does not readily absorb moisture, etc. The top should be made in the same way as is recommended for Manual Training benches, care being taken to prevent the opening of the joints, as when this occurs, the water used in scrubbing soaks through to the bake boards or into the drawers below. The individual stoves are usually placed on the top of the table, which should, accordingly, be protected directly under the stoves by a strip of aluminum carefully tacked down at the edges, or of slate, marble, specially toughened glass, or vitrified tiling. In addition to the cooking tables, a supply table should be provided for the centre of the rectangular space. This also may be fitted with cupboards underneath, but sufficient space should be left between the cupboard and the floor to allow of effective sweeping. Where a separate dining-room is not provided, table service may be taught here. In such cases, two 10-inch boards are sometimes attached to the two long sides of the supply table in order to give room beneath to sit comfortably. A teacher's table, containing drawers and metal-lined receptacles for storing sugar and flour, is also required.

*Seats.*—Seats of some kind are a necessity. Stools, chairs with folding backs, or swing seats may be used. If stools or chairs are used, the legs should be rubber tipped in order to lessen the noise; they should be of a size which admits their being placed under the tables when not in use. The attached seats may be of wood with an iron bracket screwed to the leg of the table and swinging underneath when not in use.

*Stoves and Ranges.*—When practicable, both a coal and a gas range should be provided. A plain coal range with six holes and removable tops and suitable oven and dampers is necessary. The burners of the gas range should have drilled holes, and both burners and tops should be movable to admit of effective cleaning. The most convenient type of gas stove has a high oven which does not necessitate stooping. For school use the oven should not be directly over the gas rings.

A fireless cooker should also be provided. A cheap one may be made of a large wooden box, barrel, or pail filled with excelsior, hay, or sawdust. In addition to the two ranges a small stove is required for each pupil. This may be gas, electric, kerosene, or de-natured alcohol. In some of the towns of the Province where gas is not available, small electric stoves are used with satisfactory results. The individual stoves may be removed entirely from the top of the table when not in use. The table gas stoves for individual use should be placed at such a height that the table beneath may be readily cleaned. The top should be large and flat enough to hold the cooking utensils without upsetting. Hinged joints which allow the stove to be swung from the table are sometimes used, but in this case great attention should be paid to the joint as leakages frequently occur. The series of individual stoves should be provided with a tap to cut off the whole gas supply when necessary. The tap to each stove should be placed so that the pupil has not to put her arm over the flame in order to turn it off.

*Sinks and Plumbing.*—In every kitchen there should be at least two sinks, each provided with hot and cold water, and to prevent crowding these should be as far apart as convenient. The best material is porcelain, though an iron sink enamelled may be used. Sinks should not be fitted into the work tables, for this prevents open plumbing; the space below the sink should never be enclosed. For taps, etc., nickel-plate is a good material. High faucets cause splashing. The S variety of trap should be used as it is easily opened. Drain boards should be provided. These may be of porcelain or wood.

*Kitchen Utensils.*—All utensils should be plain with smooth surfaces and without angles. The materials of which they are made are aluminum, enamel, tin, earthen or wood, according to the purpose for which they are required. Frying pans are usually iron or steel.

The following is a list of equipment recommended for a class of 24 for individual work:

*Graniteware.*—

- 24 Saucepans No. 12, with covers.
  - 24 Saucepans No. 10.
  - 2 2-Quart saucepans, with covers.
  - 2 4-Quart kettles, with covers.
  - 4 Double boilers (1 qt.).
  - 24 Small saucers.
  - 24 Plates.
  - 2 Colanders.
  - 2 Coffee pots (1 qt.).
  - 1 Funnel (medium size).
  - 4 Round pudding dishes, 8-inch diameter.
  - 2 Teakettles (medium size).
  - 2 Pitchers (2 qts).
  - 6 Small dish pans.
  - 12 Rinsing pans.
  - 8 Soap dishes.
  - 2 Sink strainers.
  - Scrap jars with covers for tables (bean pots may be used).
- Estimated cost—\$47.00.

*Tinware, Russian Iron, etc.*—

- 24 Tin plates (to work on).
- 24 Measuring cups ( $\frac{1}{2}$  pint size, marked also in thirds and fourths).
- 24 Small cake tins (size at top about  $5\frac{1}{2} \times 2\frac{3}{4}$  inches).
- 24 Small timbale moulds.
- 12 Graters.
- 4 Nutmeg graters.
- 6 Apple corers.
- 12 Biscuit cutters.
- 4 Sets muffin pans (6 in each set).

- 2 Shallow tins (size to fit oven).
- 2 Skimmers.
- 1 Qt. measure.
- 4 Steamers.
- 24 Salt shakers.
- 4 Pepper shakers.
- 1 Bread box.
- 1 Large flour tin .... }
- 1 Large sugar tin .... } For supplies, but unnecessary if the  
teacher's table has zinc-lined drawers.
- 1 Dust pan.
- 1 Meat pan and rack.
- 24 Small frying pans.
- Estimated cost—\$16.00.

#### Wire Goods.—

- 24 Egg beaters.
- 2 Dover egg beaters.
- 2 Toasters.
- 2 Cake coolers.
- 1 Large strainer.
- 24 5½-inch strainers.
- 1 Set meat skewers.
- 2 Potato mashers.
- 1 Flour sifter.
- Estimated cost—\$3.50.

#### Woodenware.—

- 24 Spoons for mixing (shallow bowls).
- 24 Small pastry boards—if not fitted in tables.
- 12 Small rolling pins.
- 2 Bread boards.
- 2 Chopping bowls.
- 12 Vegetable brushes.
- 8 Scrubbing brushes.
- 6 Scouring boards for knives.
- Estimated cost—\$10.00.

#### Crockery or Earthenware.—

- 24 Bowls with straight sides (1 qt.).
- 24 Custard cups.
- 6 Bowls with flaring sides (1 qt.).
- 6 Bowls (2 qts.).
- 6 Pitchers (1½ pts.).
- 3 Pitchers (2 qts.).
- 6 Soup plates.
- 6 Teapots (1 pint).
- Estimated cost—\$8.00.

## Cutlery.—

- 24 Tablespoons.
- 48 Teaspoons.
- 24 Knives and forks for desks.
- 24 Vegetable knives.
- 6 Spatulas.
- 1 Meat knife.
- 2 Bread knives.
- 2 Chopping knives.
- Estimated cost—\$21.50.

## Glassware.—

- 2 Lemon reamers.
- 2 Dozen screw-top glass jars ( $\frac{1}{2}$  pint).
- 1 Dozen 1-quart glass jars, japanned top.
- 1 Dozen 2-quart glass jars, japanned top.
- 2 Dozen  $\frac{1}{2}$ -pint fruit jars.
- 2 Dozen jelly glasses.
- Estimated cost—\$5.50.

## Miscellaneous.—

- 1 Food chopper.
- 1 Iron frying kettle.
- 1 Can opener.
- 1 Corkscrew.
- 1 Screw driver.
- 1 Pair scissors.
- 1 Cleaver.
- 1 Knife sharpener.
- 1 Set scales (6 lbs.).
- 1 Set fine knitting needles.
- 2 Trays—japanned or white metal.
- 6 Asbestos mats.
- 1 Match box.
- 1 Whisk for stove.
- 1 Polishing brush for stove.
- 1 Floor brush (short handled).
- 1 Broom.
- 1 Cleaning pail.
- 1 Garbage pail, with cover.
- Estimated cost—\$10.00.

## Linen, etc.—

- 3 Dozen dish cloths,  $\frac{1}{4}$  yard... }
- 4 Dozen table cloths,  $\frac{1}{4}$  yard... } The cloths should be of different material so as to be easily distinguished.
- 4 Dozen dish towels,  $\frac{7}{8}$  yard.

- 6 Roller towels (2 yards).
- 2 Floor cloths.
- 6 Oven cloths (about  $\frac{1}{2}$  yard square).
- 6 Dusters.
- 3 Yards cheese cloth.

Estimated cost—\$10.00.

Estimated total cost of utensils—not including serving dishes—  
\$131.50.

Serving dishes to be used in kitchen; these may be omitted from  
dining-room equipment.—

- 24 Cups and saucers.
- 24 Plates, tea size.
- 24 Cereal saucers.
- 2 Platters.
- 2 Vegetable dishes.
- 6 Plates, breakfast size.
- 2 Small pitchers.
- 2 Small sugar bowls.
- 6 Glasses.
- 24 Plated teaspoons.
- 24 Plated forks (med. size).
- 24 Plated knives (med. size).
- 3 Tablespoons.

Estimated cost of china and silver—\$34.00.

*Scientific Experiments.*—If space will allow, a table for chemical and physical experiments may be placed at the side of the room. A suitable scientific equipment is as follows: 1 doz. 4 oz. beakers, 1 doz.  $\frac{1}{2}$ -pt. flasks, 1 doz. 6-inch beakers, 2 doz. nests of test tubes (4, 5 and 6-inch), 1 doz. 2-inch watch glasses, 1 chemical thermometer, 1 microscope. Estimated cost, \$35.22. If, when needed, a microscope can be borrowed from the High School, this cost will be reduced by about \$27.00

*Dining Room.*—The following list is recommended:

|                                         |        |
|-----------------------------------------|--------|
| Silence cloth .....                     | \$1 50 |
| Dining-room Table and Chairs, oak ..... | 30 00  |
| 2 Linen Table Cloths .....              | 7 50   |
| 1 Doz. Linen Napkins .....              | 2 50   |
| 1 Doz. Linen Doilies .....              | 3 00   |
| 1 Doz. Cereal Saucers .....             | 1 20   |
| 1 Doz. Tea Cups and Saucers .....       | 1 50   |
| 1 Doz. Coffee Cups and Saucers .....    | 1 00   |
| 1 Doz. Dinner Plates .....              | 1 20   |
| 1 Doz. Soup Plates .....                | 60     |
| 1 Doz. Tea Plates .....                 | 1 00   |

|                                                         |         |
|---------------------------------------------------------|---------|
| 1 Bread Plate .....                                     | \$0 20  |
| 2 Covered Vegetable Dishes .....                        | 75      |
| 2 Uncovered Vegetable Dishes .....                      | 40      |
| 1 Large Platter .....                                   | 1 00    |
| 1 Medium Platter .....                                  | 50      |
| 1 Small Platter .....                                   | 30      |
| 1 Medium Salad Dish .....                               | 40      |
| 2 Tea Pots .....                                        | 45      |
| 1 Cream Pitcher .....                                   | 10      |
| 1 Sugar Bowl .....                                      | 25      |
| 1 Glass Fruit Dish .....                                | 30      |
| 3 Small Salt Shakers, glass .....                       | 45      |
| 3 Pepper Shakers, glass .....                           | 45      |
| 1 Doz. Teaspoons and Coffee Spoons, silver plated ..... | 2 00    |
| 1 Doz. Dessert Spoons, silver plated .....              | 2 50    |
| 4 Tablespoons, silver plated .....                      | 2 00    |
| 1 Doz. Knives, silver plated .....                      | 3 00    |
| 1 Doz. Forks, silver plated .....                       | 2 50    |
| 1 Doz. Glass Tumblers .....                             | 50      |
| 1 Water Pitcher .....                                   | 50      |
| Total Cost .....                                        | \$69 55 |

Dining Room table and chairs can, of course, be bought for less than the above prices. It would be better, however, to buy a good kitchen table than a cheap dining table. The dishes should be selected from "open stock" so that when breakages occur they may be replaced with the same kind of dishes. The china should be subdued in colouring.

*Sewing Room.*—Where sewing is taken in the ordinary class room by the grade teacher, the following equipment will be sufficient for each pupil:

A work box containing scissors, thimble, thread, cushion and pins, needles, measure and emery, and costing from 50 to 75c. per set is required. The boxes may be made of millboard, or candy boxes may be used. A special cupboard should be provided to contain these boxes and the working material. A demonstration frame of coarse canvas and mounted on a stand is also desirable to teach the various stitch forms.

Where a special room can be provided, the following equipment will be sufficient for 15 pupils in dressmaking or 30 in sewing:

|                                |         |
|--------------------------------|---------|
| 8 Tables (5 ft. kitchen) ..... | \$25 00 |
|--------------------------------|---------|

NOTE.—A less expensive table may be provided of boards supported on trestles. A convenient plan for the dressmaking tables is to have them hinged to the wall, so as to drop down when not in use.

|                                      |         |
|--------------------------------------|---------|
| 20 Chairs, \$7.50 doz. ....          | \$12 50 |
| 1 Stove (3 burners and tubing) ..... | 3 75    |

|                                   |          |
|-----------------------------------|----------|
| 6 Irons .....                     | \$1 50   |
| 4 Ironing Boards .....            | 3 60     |
| 1 Wardrobe .....                  | 25 00    |
| 1 Mirror .....                    | 10 00    |
| 4 Sewing Machines .....           | 100 00   |
| 18 Tape Measures .....            | 3 60     |
| 33 Scissors (3 button hole) ..... | 9 40     |
| 6 Large Boxes, 40c .....          | 2 40     |
| 30 Small Boxes, 10c. ....         | 3 00     |
| <hr/>                             |          |
| Total cost of equipment .....     | \$174 75 |

*Laundry.*—The equipment given below is for laundry work carried on in the ordinary school kitchen as it is not probable that for some years separate laundries will be fitted up. In addition to the articles found in the kitchen the following will be required:

|                                               |         |
|-----------------------------------------------|---------|
| 1 Large Washing Tub .....                     | \$0 83  |
| 12 Small Washing Tubs .....                   | 7 20    |
| 1 Pail .....                                  | 23      |
| 4 Flat Irons, 7 lbs. ....                     | 2 20    |
| 4 Flat Irons, 6 lbs. ....                     | 1 80    |
| 8 Flat Irons, 5 lbs. ....                     | 3 20    |
| 8 Flat Irons, 4 lbs. ....                     | 2 56    |
| 2 Polishing Irons .....                       | 3 60    |
| 8 Iron Stands .....                           | 40      |
| 8 Iron Holders, asbestos. ....                | 32      |
| 1 Large Wringer .....                         | 4 25    |
| 2 Small Wringers .....                        | 5 00    |
| 1 Tin Dipper .....                            | 20      |
| 1 Clothes Basket .....                        | 1 25    |
| 1 Boiler .....                                | 1 25    |
| 6 Tables, 4 feet long .....                   | 5 40    |
| 8 Skirt Boards, \$1.50 .....                  | 12 00   |
| 8 Small Wash Boards .....                     | 3 20    |
| 2 Clothes Horses .....                        | 1 76    |
| 3 Soft Brushes .....                          | 1 14    |
| 3 Whisk Brooms .....                          | 54      |
| 100 Feet Clothes Line .....                   | 90      |
| Clothes Pins .....                            | 10      |
| Safety and Toilet Pins .....                  | 25      |
| 1 Yard White Flannel .....                    | 40      |
| 10 Yards Cheese Cloth .....                   | 40      |
| 10 Yards Unbleached Cotton .....              | 80      |
| 4 Yards Cotton Felting (45 inches wide) ..... | 2 00    |
| <hr/>                                         |         |
| Total cost of equipment .....                 | \$63 18 |

Good work may, however, be done in the school kitchen with the following equipment:

|                                |         |
|--------------------------------|---------|
| 24 Flat Irons, 1 lb. ....      | \$8 00  |
| 12 Polishing Irons, 1 lb. .... | 4 00    |
| 26 Improved Handles ....       | 3 85    |
| 14 Pony Wash Boards ....       | 1 75    |
| 72 Clothes Pins ....           | 10      |
| 1 Clothes Line ....            | 25      |
| 1 Grey Blanket ....            | 3 00    |
| 10½ Yards Cotton ....          | 1 05    |
| 6 Yards Cheese Cloth ....      | 30      |
| <hr/>                          |         |
| Total cost of equipment .....  | \$22 30 |

*Home Nursing.*—Home nursing can be taught in the class rooms if there is a space where a bed can be temporarily placed. A special cupboard should be provided to contain the small articles. Much may be done with a large doll's bed, with a large doll for the pseudo-patient. Where there is a cottage or apartment the bedroom is, of course, available. The following is a list of suitable equipment:

|                                                             |        |
|-------------------------------------------------------------|--------|
| Bedstead, steel frame, white enamel, woven wire spring..... | \$6 00 |
| Mattress, sanitary . ....                                   | 7 00   |
| Feather Pillow .....                                        | 75     |
| 4 Cotton Sheets .....                                       | 4 00   |
| 4 Cotton Pillow Slips .....                                 | 60     |
| 1 Bed Spread .....                                          | 1 50   |
| 2 Single Blankets .....                                     | 4 00   |
| McIntosh, 1½ yards .....                                    | 1 10   |
| Hot Water Bag .....                                         | 90     |
| Fountain Syringe .....                                      | 1 00   |
| Muslin Bandages (7 yards muslin) .....                      | 35     |
| Gauze Bandages .....                                        |        |
| Samples of Material for Flannel Bandages. ....              |        |
| “ “ “ “ Plaster “ .....                                     |        |
| “ “ “ “ Rubber “ .....                                      |        |
| Absorbent Cotton .....                                      | 10     |
| Oiled Muslin .....                                          | 25     |
| Rubber Tissue .....                                         | 25     |
| Bed Tray .....                                              | 1 00   |
| Bed Rest .....                                              | 2 00   |
| Hot Water Plate .....                                       | 75     |
| Feeding Tube .....                                          | 20     |
| Drinking Tube .....                                         | 02     |
| Medicine Bottles, poison, etc. ....                         | 25     |
| Medicine Dropper .....                                      | 02     |
| Medicine Glass (Graduated) .....                            | 25     |
| Minim Glass .....                                           | 75     |

|                               |         |
|-------------------------------|---------|
| Eye Bath .....                | \$0 20  |
| Six oz. Graduated Glass ..... | 50      |
| Eyelid Rod .....              | 06      |
| Probe .....                   | 50      |
| Forceps . . . . .             | 1 00    |
| Scissors . . . . .            | 1 25    |
| Thermometer . . . . .         | 1 00    |
| Thermometer, bath .....       | 10      |
| Foot Bath .....               | 1 00    |
| <hr/>                         |         |
| Total cost of equipment ..... | \$38 65 |

*Emergency Cabinet.*—A First Aid Emergency Cabinet should be provided in each shop, containing rolls of cotton and gauze bandages, absorbent cotton, surgical and styptical gauze, tourniquet appliances, ointment for burns, bruises and cuts, antiseptic soap, and a book of emergency directions.

*Illustrative Material.*—The teaching of Household Science may be greatly helped if appropriate charts and specimens are used. Examples of these are as follows: Charts showing the comparative nutritive and economic value of foods, and the different cuts of meat properly coloured. Home-made charts may be prepared from cuts in various bulletins and text books. A bulletin board should be provided for the posting of current items of interest relating to household management. Specimens of foods and other material may be placed in jars or bottles labelled and arranged in order on shelves. Such specimens may be obtained from large manufacturers, as, for instance, the makers of cocoa, flour, cereals, cottons, linens, etc.

*Library.*—Every Household Science department should be furnished with a reference library. A list of suitable books will be found in the Reference Catalogue, issued by the Department of Education. Two or three of the best housekeeping magazines should be taken and the reading of the pupils should in all cases be directed. If a dining-room is provided it may be used as a reading-room also when not required for table service. A school scrap book will be of service for keeping recipes and newspaper and other cuttings.

### III. DESCRIPTION OF ACCOMMODATIONS AND EQUIPMENT FOR MANUAL TRAINING IN CITY AND TOWN SCHOOLS

The following description of the accommodations and equipment for Manual Training applies especially to Urban Schools and is *pro tanto* applicable to the provision for Technical and Industrial classes in Wood-working, Wood-turning, Forging, and Machine shop practice.

#### ACCOMMODATIONS

When accommodation has yet to be provided, Boards should erect a separate building adjacent to the school with accommodations as detailed below. When rooms in a building already erected are to be adapted, the conditions detailed below should be observed, as far as practicable. As a general prescription, it should be borne in mind that the workshops should be so situated as not to disturb the rest of the school.

*Woodworking Shop.*—A room 30 feet by 40 feet, situated above ground, will provide for all the requirements of wood-working and wood-turning. A basement room, unless specially erected for the purpose, is seldom satisfactory. For demonstration purposes, a portion of the shop should be set apart with two or three tiers of benches or chairs for the pupils, and with a blackboard, and a bench and set of tools for the teacher. If possible, however, a separate demonstration room\* should be provided immediately adjoining the shop.

An abundant supply of light is a prime requisite for shop work. Light from above is best. Otherwise it may come from any side or from all sides. If the windows are placed 4 or 5 feet from the floor, there will be sufficient wall space for displaying panels, tool racks, charts, etc. The light should fall on the back and left-hand end of the bench or on both ends. When artificial light is needed, electric light is to be preferred, and one lamp properly guarded may be suspended over each bench or one or more electric clusters may be placed in the ceiling. In the former case, the lamp should be capable of being raised or lowered.

A special room about 18 feet by 18 feet should be provided for storage purposes adjacent to the shop, but material may be stored in the shop, where it does not interfere with the work. A store room is especially desirable where there is a large attendance of pupils. Lumber may be stored on end in a portion of the wall space, the various kinds and sizes being

---

\* "In the School of The Ethical Culture Society, New York, a special demonstration room is provided with desks, demonstration bench, and blackboards. A swinging blackboard is fitted into the wall, separating the demonstration room from the workshop. The working drawings of the piece of work under construction are drawn on the board, and when the class passes into the workshop the board is swung about a central pivot, and it then serves as a working plan for the class at the benches. When not in use for demonstration purposes, the room may be used as an ordinary class room. In this way convenient accommodation is provided for drawing the working plans which are ordinarily made at the bench."

separated by pegs. Along one side of the storage room should be arranged 3 rows of pegs, each 1 foot apart and about 14 inches long. The first row should be placed 18 inches from the floor, the next  $3\frac{1}{2}$  feet, and the top 8 feet. This arrangement permits the different lengths and kinds of boards to be stored on end between the pegs, thus allowing a board of any required length to be readily selected. Along another wall should be ranged nests of pigeon holes extending from the floor to the ceiling, and providing storage for cut up material, nails, screws, hardware, etc. Doors should be provided to keep out the dust. If power is available, a circular saw may also be placed in the storage room to cut lumber into sizes suitable for class use, as it is more economical and convenient to buy the lumber in boards than in cut sizes. Finished work of small dimensions may be stored in the pigeon holes or in pigeon holes in the teachers' room; one pigeon hole, if possible, being allotted to each pupil. The size of each pigeon hole depends, of course, upon the size of the work constructed. They should be so arranged that one door will cover the work of one class. Finished work of large dimensions should be stored where suitable space is available.

*Forge Shop.*—The size of the forge shop depends on the number of forges to be installed; except in the larger cities, six are sufficient. Like the wood-working shop, the room must be adequately lighted and provided with storage accommodations for stock, fuel, and work. The light in the forge room should not shine directly on the anvil or forge. If it does, it makes it impossible to judge the proper heat of the metal. The north side of the school building is preferred, but, if possible, the forge room should be located in a one-story building with a large skylight. If the windows are a suitable distance apart, the forges may be placed between them along the wall; but an open space should be left in the centre for vice bench, tool racks, etc. As in the case of the wood-working room there should be a demonstration forge and anvil, blackboard, and tiers of seats for the pupils. The anvils should be set at such an angle to the forges that there will be plenty of elbow room and no danger of pupils interfering with each other. The floor should be concrete, but if wood is used (and it has some advantages) it should be properly protected under the forges and anvils, with sheet iron or zinc about 12 gauge.

Either of two kinds of forges may be used, *i.e.*: (1) The hand blown, smoke burning, self cleaning, forced natural up draft forge with overhead piping. (2) Down draft forge, pressure and exhaust blowers, with underground piping. The underground tile piping possesses many advantages over the system of overhead piping; it does not obstruct space and light, and is indestructible and entails no further expense after initial installation. The position of the forges should, of course, be planned before the floor is laid. If it is probable that at any future time additional forges will be installed, the tiling therefor should all be laid at once; for then the additional forge connections can be made without tearing up the floor.

*Machine Shop.*—The floor of the room for machine shop practice should be solid, so that the lathes and other machines may be securely

bolted to it. An auxiliary room is also needed for the storage of the numberless small tools; the shop check system of distribution of tools should be used. The machine shop should be well lighted from two opposite sides; the lathes should be placed along one side under the windows, and a bench fitted with vices for fitting, chipping and filing along the other. At one end should be a demonstration gallery provided with blackboard, a teacher's demonstration lathe, and tiers of seats. The centre of the room is thus reserved for other power machines, such as tool grinders, shapers, drills, etc. All machines are best driven by individual motors. When overhead shafting has to be used it should be hung in such a way as to prevent vibration in the room above.

*Combined Forge and Machine Shop.*—In the majority of schools in the Province it is neither necessary nor desirable to equip one shop for forge work and another for machine shop practice. Except in the cases where large industrial classes in these subjects are probable and the room will have to be used at night, a room combining the equipment of the two will suffice. In this case windows in every available space are desirable.

*Blackboards.*—Adequate and suitably placed blackboards are indispensable for all the workshops. For details of construction consult the High School Regulations. Each should be equipped with chalk, compasses having a rubber or steel reversible point, and tee and set squares. The board should have one square edge on which a tee square may be used. This provision may be secured in one or other of two ways: Either by a sliding board in front of the fixed board or by blocking out the centre section for a distance of 1 inch. The former is to be preferred, as it provides additional space. It also allows drawings or other work on the fixed board to be covered when desired. If one section of the blackboard is provided with vertical and horizontal lines an inch apart and with isometric angle lines, it will be of great service in making freehand dimensioned sketches.

*Cloak Rooms and Lavatories.*—Where the pupils in attendance are from a school immediately adjacent, cloak rooms may not be needed; but, at centres where they come from distant schools, cloak room conveniences of the character prescribed under the High School Regulations should be provided. A wash basin or trough with hot and cold water, soap and soap receptacles, and towels should be provided in each shop.

*Emergency Cabinet.*—A First Aid Emergency Cabinet should be provided in each shop, containing rolls of cotton and gauze bandages, absorbent cotton, surgical and styptical gauze, tourniquet appliances, ointment for burns, bruises and cuts, antiseptic soap, and a book of emergency directions.

*Teachers' Room.*—A room of at least 8 by 10 feet should be provided for the teachers, furnished with a desk for correspondence, and with a cabinet for the filing of drawings, blue prints, etc. Where there are more than one teacher, a larger room is necessary. In such a room pigeon holes may also be provided for special work or to supplement the usual storage facilities of the building.

*Heating.*—Sixty degrees will afford a good working temperature. A thermometer shall be provided for each shop. Where stoves are used, they shall be surrounded by a jacket of tin, zinc or galvanized iron, and every precaution taken to prevent the ignition of shavings or other refuse.

*Ventilation.*—Provision should be made for an adequate supply of pure air at all times. There should be a complete change at least three times an hour. In the forge room special provision is necessary for carrying off the products of combustion. If the forge itself does not make this, special attention must be given to the general system of ventilation. All windows should be made to open so that these may be used if necessary.

## EQUIPMENT

1. For the lower forms of the Public School the equipment should be as follows:—

*Paper Work.*—Pencil, scissors, ruler graduated in inches, halves, quarters, and eighths, mill board for each pupil to protect the desk top, paste or other adhesive, and paper for drawing and construction.

*Cardboard Work.*—In addition, knife, compasses, set square for each pupil, one ticket punch for every five pupils, and cardboard of various weights.

*Knife Work.*—Knife, pencil, ruler, compasses, try square for each pupil, three or four small hammers, two hand screws, oil stone, oil can, and assorted brad-awls for the class, and working material.

2. For the higher forms of the Public Schools and the lower forms of the High and Continuation Schools, the equipment should be as follows:

*Wood-working Benches.*—The benches should be placed in the best lighted part of the room in such position that the light may fall upon them from above or from the left. A space should be left between the benches to allow free passage to both pupils and teachers, with sufficient aisle space where there is a good deal of traffic. The minimum space between the back of one bench and the front of another is 30 inches; 3 feet, however, is desirable. The benches may be single or double—preferably single—well and strongly made, rigid in action, and of selected, well-seasoned maple throughout, or at least with tops of that material. These provisions are especially necessary when the Manual Training benches are used for industrial evening classes. Adjustable benches, except those with steel frames, are never satisfactory. The tops of the benches should be formed of strips 1 inch to  $2\frac{1}{2}$  inches wide, glued and dowed together. They should never be made of one piece. Each bench should have two vices, one at least a rapid acting one and the other with an iron screw. If the benches are provided with tool racks, the edges of the tools should be properly guarded, and the handles should project as little as possible above the top of the benches.

---

NOTE.—Benches should be bought from firms that make a specialty of their construction; others are seldom satisfactory.

The benches should be equipped as follows:

|                                                                |        |
|----------------------------------------------------------------|--------|
| Bench Hook .....                                               | \$0 25 |
| Springfield Drawing Kit .....                                  | 50     |
| Pencil Compass .....                                           | 15     |
| Drawing Rule, 12 inches long, inches and centimeters .....     | 20     |
| Bench Whisk .....                                              | 09     |
| Marking Gauge, No. 64½ .....                                   | 27     |
| Try Square, No. 12, 6 inches .....                             | 25     |
| Jack Plane .....                                               | 1 57   |
| Firmer Chisel, plain, 1 inch and handle (octagon handles) .... | 24     |
| Firmer Chisel, plain, ¼ inch and handle " " ....               | 21     |
| Firmer Chisel, plain, ¼ inch and handles, square edge .....    | 12     |
| Back Saw, 10 inches, 16 teeth to 1 inch .....                  | 95     |

The following tools for general use are also necessary:—

|                                                                              |       |
|------------------------------------------------------------------------------|-------|
| 4 Smooth Planes .....                                                        | 7 80  |
| 4 Try Squares, No. 12, 12 inches .....                                       | 2 07  |
| 1 Disston Improved Mitre Box, and Saw 22 inches, 11 teeth to 1<br>inch ..... | 11 30 |
| 2 File Cards and Brushes .....                                               | 50    |
| 6 Screw Drivers, round, 3 inches .....                                       | 2 06  |
| 2 Screw Drivers, round, 6 inches .....                                       | 40    |
| 6 Half Round Files, handled, 8 inches .....                                  | 85    |
| 6 Flat Files, handled, 8 inches .....                                        | 68    |
| 1 Saw File, 4 inches and handled .....                                       | 10    |
| 4 Braces, 6 inches sweep .....                                               | 4 40  |
| 2 Centre Bits, 1½ inches .....                                               | 24    |
| 2 " 1 inch .....                                                             | 24    |
| 2 " ¾ " .....                                                                | 20    |
| 2 " ½ " .....                                                                | 20    |
| 2 " ¼ " .....                                                                | 16    |
| 2 Auger Bits, ¼ inch .....                                                   | 40    |
| 2 Auger Bits, ⅜ inch .....                                                   | 40    |
| 2 Auger Bits, ⅝ inch .....                                                   | 57    |
| 2 Countersinks, metal .....                                                  | 10    |
| 2 Countersinks, wood .....                                                   | 10    |
| 1 Iron Rabbet Plane .....                                                    | 1 48  |
| 1 Jointer Plane .....                                                        | 3 40  |
| 4 Gimlets, assorted sizes .....                                              | 20    |
| 6 Brad-awls, handled, fine size .....                                        | 25    |
| 4 Steel Scrapers, convex, 2 inches wide .....                                | 80    |
| 10 Mallets, hickory, round heads .....                                       | 2 50  |
| 2 Firmer Chisels, 1-16 inch, handled, square edge ....                       | 30    |
| 2 Firmer Chisels, ⅛ inch, handled, square edge .....                         | 30    |
| 2 Firmer Chisels, ¼ inch, handled, square edge .....                         | 50    |
| 2 Bevels, 8 inch, sliding .....                                              | 55    |
| 2 Mortise gauges .....                                                       | 1 20  |
| 4 Nail Sets, knurled .....                                                   | 30    |

|                                                                                                                        |        |
|------------------------------------------------------------------------------------------------------------------------|--------|
| 10 Iron Spoke Shaves .....                                                                                             | \$1 34 |
| 2 Wood Hand Screws, 10 inches .....                                                                                    | 71     |
| 4 Iron Malleable Clamps, 4 inches .....                                                                                | 94     |
| 2 Oil Stones, mounted, 8 inches .....                                                                                  | 1 40   |
| 2 Slips for gouges .....                                                                                               | 10     |
| 1 Brass Oil Can, No. 22 .....                                                                                          | 15     |
| 2 Pairs Pincers, 6 inches .....                                                                                        | 30     |
| 5 Pairs Wing Dividers .....                                                                                            | 1 05   |
| 1 Pair Cutting Pliers, side .....                                                                                      | 34     |
| 1 Pair Round Nosed Pliers, 5 inches .....                                                                              | 20     |
| 10 Hammers, 13 oz., No. 2 .....                                                                                        | 6 25   |
| 2 Firmer Gouges, 1½ inches and handles, octagon, boxwood..                                                             | 50     |
| 2 Firmer Gouges, ½ inch and handles, octagon, boxwood ....                                                             | 34     |
| 2 Firmer Gouges, ¾ inch and handles, incannell, boxwood ....                                                           | 46     |
| 2 Firmer Gouges, ½ inch and handles, incannell, boxwood ....                                                           | 42     |
| 4 Bent C Tools, 1 inch and handles, octagon, boxwood .....                                                             | 1 20   |
| 4 Bent C Tools, ¾ inch and handles, octagon boxwood.....                                                               | 1 20   |
| 1 Hatchet .....                                                                                                        | 35     |
| 1 Pad Saw, No. 5 .....                                                                                                 | 20     |
| 2 Turning Saws, 10 inches .....                                                                                        | 1 80   |
| 2 Turning Saws, 12 inches .....                                                                                        | 1 80   |
| 4 Cross Cut Saws, 22 inches .....                                                                                      | 4 40   |
| 4 Rip Saws, 22 inches .....                                                                                            | 4 40   |
| 1 Cupboard, lower part fitted with drawers, upper part with<br>glass panelled doors, made in white ash, polished ..... | 49 45  |
| 1 Black Board, T square, 2 set squares and compasses .....                                                             | 4 00   |
| 1 Saw Bench .....                                                                                                      | 2 00   |
| 1 Tool Grinder .....                                                                                                   | 4 00   |
| 1 Teacher's desk and chair .....                                                                                       | 10 00  |
| Tool Racks .....                                                                                                       |        |

*Wood-turning.*—Where wood-turning is carried on it will usually be in the wood-working room, and the lathes should be placed along one side under the windows. The lathe should have the following general specifications: 10-inch swing-over bed; length of bed, 3½ feet; distance between centres, 24 inches; weight, 250 lbs.; floor space over all, 3 feet 10 inches x 26 inches. Each lathe should be provided at the back with a shelf and tool rack. A comprehensive tool equipment for each lathe is as follows:—

|                                                 |        |
|-------------------------------------------------|--------|
| Turning gouges, ½-inch and ¾-inch .....         | \$0 54 |
| Flat Turning Chisels, 5-16-inch and ¾-inch..... | 60     |
| Round-nose Chisels, 5-16-inch and ⅝-inch.....   | 47     |
| Square Chisels, ¼-inch and 1-inch .....         | 42     |
| Parting tool, 3-16-inch .....                   | 37     |
| Paring Gouges, ½-inch and 1-inch .....          | 94     |
| Washita Oil Stone .....                         | 49     |
| Washita Slip Stone .....                        | 03     |
| Pair 6-inch Calipers .....                      | 61     |

|                  |    |
|------------------|----|
| Oil Can .....    | 20 |
| Dust Brush ..... | 23 |
| Rule .....       | 10 |

---

Total cost of tools for each lathe ..... \$5 00

*Metal-working Benches.*—More or less simple metal work is often introduced in connection with the course in wood-work. The bench for this should be strongly built with a flat top constructed of strips, as prescribed above for the wood-working benches, along one side of the room and equipped with one or two machinist's vices. A vice with an anvil cast with it will be most serviceable; this bench will also be useful in assembling larger work.

*Glue and Stain Benches.*—Though the use of cold liquid glue is becoming common, an ordinary gas ring, properly protected, should be provided for preparing and heating glue. Glue, finishes, and stains should never be used at the wood-working benches. A cupboard, the front of which lets down to form a bench, covered with zinc, may be used for storing and using these materials.

*Forge Shop.*—Except in the larger cities six forges are sufficient. Each forge should be provided with the following:

1 anvil (100 to 125 lbs.) set on hardwood block, suitably bedded in the ground at least 18 inches; 1 toolstand, 14 inches by 21 inches by 27 inches high. This may contain three or more drawers for storage of work on which each boy is engaged: anvils cost from 10 to 12 cents per lb.

Also one each of the following: fire set;  $\frac{1}{4}$ -inch flat jaw tongs, 16 inches;  $\frac{3}{8}$ -inch flat jaw tongs, 16 inches;  $\frac{1}{2}$ -inch flat jaw tongs, 16 inches;  $\frac{3}{4}$ -inch flat jaw tongs, 16 inches; gad tongs, pick-up tongs,  $11\frac{1}{8}$  inches; hot chisel (square stock)  $11\frac{1}{8}$  inches; hammer (square face); flatter, 2 inches (square face);  $\frac{1}{4}$ -inch round hand punch;  $1\frac{1}{2}$  or  $1\frac{1}{4}$ -inch ball pein hammer; caliper rule; 1 centre punch. Estimated cost, \$38.00.

The following tools for general use are also necessary: 1 hardie, 1 cold set, 1 pair  $\frac{3}{8}$ -inch fullers, 1 pair  $\frac{3}{4}$ -inch fullers, 1 brass 2-ft. rule, 1 pair 9-in. calipers, 1 pair 4-in. outside calipers, 1 steel square, 1 light forging hammer, 1 heavier forging hammer, 1 sledge hammer (8 lbs.) for every three pupils. Estimated cost \$18.00.

*Machine Shop.*—The work in this course falls naturally into three divisions:

1. ORNAMENTAL WORK IN BRASS AND COPPER.—The equipment needed is as follows: Anvils and hammers of various shapes, an annealing tray (if a forge is not available), a box large enough to hold 2 gallon stone jars, and about half a bushel of sawdust, a pair of blacksmith's tongs, cutting shears straight and curved, steel square, jeweller's saw frame, piercing saw, breast drill and assortment of drills, compasses, calipers, surface plate, assortment of files, sandbag or engraver's pad, pitch block, set of chasing tools and punches, set of dapping tools, a dapping die, flat, round nosed and pointed pliers. Estimated cost, \$60.00 (for 10 pupils).

2. CHIPPING AND FILING.—The equipment for chipping and filing consists of heavy benches fitted with machinist's vices, one for every boy under instruction at one time. The vices should be of various patterns, and each vice should be equipped with the following tools:

|                                            |        |
|--------------------------------------------|--------|
| 3-16-inch square file, 6 inches .....      | \$0 08 |
| Flat bastard file, 12 inches .....         | 17     |
| Hand Second cut file, 12 inches .....      | 22     |
| Half round bastard file, 10 inches .....   | 15     |
| Smooth file, 7 inches .....                | 10     |
| Half round second cut file, 5 inches ..... | 09     |
| Pillar file, 6 inches .....                | 09     |
| Taper saw file, 6 inches .....             | 06     |
| 1-lb. hammer .....                         | 45     |
| File card .....                            | 08     |
| 4-inch spring divider .....                | 31     |
| 3-inch steel scale .....                   | 32     |
| 4-inch steel square .....                  | 2 00   |
| Centre punch .....                         | 11     |
| Scriber . . . . .                          | 12     |
| Cold chisel .....                          | 08     |
| Cape chisel .....                          | 15     |
| Round nose chisel .....                    | 11     |
| Pair of copper vice jaws .....             | 75     |
| <hr/>                                      |        |
| Total cost .....                           | \$5 44 |

3. LATHE AND MACHINE WORK.—2 engine lathes 10 inches swing, 4 feet bed; 1 speed lathe 10 inches swing, 4 feet bed. Each lathe to be fitted with the necessary attachments driven by individual motor if possible, and supplied with the following tools:

|                                                        |        |
|--------------------------------------------------------|--------|
| Diamond point tool .....                               | \$0 48 |
| Round nose tool .....                                  | 48     |
| Side tool .....                                        | 48     |
| Parting tool .....                                     | 48     |
| Thread tool .....                                      | 48     |
| Centre punch .....                                     | 11     |
| 4-inch spring calipers .....                           | 31     |
| 4-inch inside calipers .....                           | 27     |
| 6-inch steel scale .....                               | 60     |
| Centre gauge .....                                     | 20     |
| Lathe dog, 1/2-inch, 3/4-inch, 1-inch and 1 1/2-inch.. | 1 52   |
| <hr/>                                                  |        |
| Total cost .....                                       | \$5 41 |

If the lathes are not driven by individual motors, the necessary shafting, pulleys, balls, and hangers must be supplied.

- 1 12-inch drill press with capacity to drill 1¼-inch hole, automatic feed.
- 1 Grindstone and trough.
- 1 Power Hack Saw.

A small planer or shaper may be added if desired. In addition to the above the machine shop equipment comprises numerous small tools, too many to enumerate, and varying in quality and kind. These can be added as the work demonstrates their necessity.

*Combined Forge and Machine Shop.*—The following is a list of a combined equipment:

|                                              |          |
|----------------------------------------------|----------|
| Engine Lathe .....                           | \$236 75 |
| One additional lathe to be provided.         |          |
| Grinding machine with two emery wheels ..... | 34 00    |
| Wet Tool Grinder .....                       | 155 00   |
| Two Forges with Motors .....                 | 128 00   |
| No. 2 Power hack saw .....                   | 24 00    |
| No. 16 back-gearcd Shaper .....              | 270 25   |
| Two 90-lb. anvils .....                      | 22 50    |
| Sensitive drill .....                        | 42 00    |
| Back geared drill .....                      | 80 00    |
| 12 bench vices .....                         | 67 70    |

*Illustrative Material.*—As the rooms set apart for Manual Training are usually class rooms as well as workshops, the question of cultivating the taste of the pupils should not be lost sight of. Material may be obtained for this purpose, which is also illustrative of the shop work. Examples are: panels of specimen woods, cones from the various evergreens, pressed leaves of the hard woods, photographs of lumber industries, forest scenes, framed prints of the principal lumber furnishing trees, etc. Panels should also be provided with specimen tools, the parts of which have been separated and named. Specimens may also be obtained from manufacturers showing the steps in the manufacture of the tools; also blue prints used in the local factories.

*Library.*—Each Manual Training Centre should be furnished with a bookcase and a rack for magazines and illustrated catalogues. Many firms publish the latter richly illustrated with actual photographs, which can be used in teaching design and proportion. A scrap book in which to store drawings, cuttings, and photographs is also desirable. For suitable reference books, see Reference Catalogue, issued by the Department of Education.

#### IV. SPECIAL REGULATIONS FOR THE ESTABLISHMENT AND MAINTENANCE OF ELEMENTARY HOUSEHOLD SCIENCE CLASSES IN VILLAGE AND RURAL SCHOOLS

##### ESTABLISHMENT, MAINTENANCE, AND LEGISLATIVE GRANTS

1. The Public or Separate School Board of Trustees of a village or rural school which is unable to avail itself of the provisions of the General Regulations, but which maintains classes in Elementary Household Science satisfactory to the Minister of Education, employs a teacher with a Departmental Certificate in this subject, and provides accommodations and equipment satisfactory to the Minister, shall be paid an initial grant not exceeding \$50 and a subsequent annual grant of \$30 for each school approved by the Minister, from any appropriation made by the Legislature for instruction in the subject. In no year, however, shall the Legislative Grant exceed the total expenditure of the Board for these classes.

2. The accounts of the classes in Elementary Household Science shall be kept separate from the general school expenditure, and the grants made must be expended solely for these classes. The totals of the receipts and expenditures shall, however, also be included in the General Financial Statement of the Board to the Department of Education.

3. A definite place shall be provided for all the classes in the timetable, satisfactory to the Inspector of Household Science.

4. On the report of the Inspector of Household Science that the organization and the teaching are satisfactory, an annual grant of \$30, in addition to the regular salary paid by the School Board, will be paid by the Minister out of any appropriation made by the Legislature for this purpose, to each legally qualified teacher who holds also a certificate in Household Science, and who gives instruction in accordance with the regulations of the Department of Education.

5. If in any year the amount voted by the Legislature is insufficient to pay the grants in full, or if there is a balance over, the Minister may make a *pro rata* reduction or increase.

6. The foregoing provisions shall not apply to schools receiving grants for Household Science under the General Regulations. The grants made to them cover the Household Science of all the classes.

7. When an equipment on which the Legislative Grant has been paid to its full value remains unused for two years, the Minister may direct the transfer of said equipment to another school in the Province.

##### ACCOMMODATIONS

The following description of Household Science accommodations applies to the Schools provided for above:

*Cookery, Sanitation, and Hygiene.*—If a separate room is provided, the General Regulations as to the accommodations apply. But such a room, though desirable, will be seldom available, and the elementary work may be done in the school room with the equipment given below. The trestle tables may be placed at one end and removed when not in use. If this is not practicable, the trestles may be placed across the desks in such a way that the pupils may work on each side. If the teacher's table has a flat top, this may be used in addition. The trestles may even be dispensed with and the table tops placed across the desks.

The Board shall also provide facilities for storing the utensils, supplies, and other requisites.

### EQUIPMENT

*Kitchen Utensils.*—Where gas stoves, plumbing, and a separate room are not available, the equipment should be as follows:

#### *No. 1 Equipment for 12 pupils*

|                              |         |
|------------------------------|---------|
| 5 Trestle tables .....       | \$20 55 |
| 12 Brown bowls .....         | 85      |
| 12 Bread tins .....          | 95      |
| 12 Teacups and saucers ..... | 1 25    |
| 12 Tin measuring cups .....  | 1 25    |
| 12 Egg beaters .....         | 30      |
| 12 Forks .....               | 50      |
| 12 Case knives .....         | 1 25    |
| 12 Paring knives .....       | 1 25    |
| 12 Plates .....              | 85      |
| 12 Sauce pans .....          | 1 68    |
| 24 Tea spoons .....          | 40      |
| 12 Wooden spoons .....       | 60      |
| 12 Stew pans .....           | 2 40    |
| 12 Strainers .....           | 65      |
| 2 Trays .....                | 80      |
| 1 Bowl, yellow .....         | 25      |
| 1 Bowl, yellow .....         | 35      |
| 1 Bowl, yellow .....         | 45      |
| 1 Pr. scissors .....         | 50      |
| 6 Frying pans .....          | 90      |
| 3 Tea strainers .....        | 15      |
| 1 Butcher knife .....        | 30      |
| 1 French knife .....         | 60      |
| 2 Spatulas .....             | 80      |
| 2 Table spoons .....         | 13      |
| 4 Brushes .....              | 20      |
| 2 Stove mitts .....          | 50      |
| 4 Asbestos mats .....        | 20      |

|                                    |       |
|------------------------------------|-------|
| 1 Cork screw .....                 | 25    |
| 4 Egg beaters .....                | 60    |
| 4 Wash basins .....                | 92    |
| 3 Draining pans .....              | 69    |
| 2 Tin dippers .....                | 40    |
| 1 Colander .....                   | 35    |
| 1 Pan, enamel .....                | 18    |
| 1 Emery knife .....                | 20    |
| 2 Pepper shakers .....             | 1 50  |
| 1 Bell .....                       | 50    |
| 6 Stoves (kerosene) .....          | 6 00  |
| 6 Soup plates .....                | 60    |
| 1 Jug .....                        | 45    |
| 1 Sauce pan .....                  | 23    |
| 1 Sauce pan .....                  | 30    |
| 1 Covered kettle .....             | 60    |
| 4 Dish pans .....                  | 2 00  |
| 6 Broilers .....                   | 48    |
| 3 Cake tins .....                  | 35    |
| 4 Graters .....                    | 40    |
| 3 Strainers .....                  | 75    |
| 24 Pattie pans .....               | 20    |
| 2 Fibre pails .....                | 70    |
| 1 Pail, enamel .....               | 70    |
| 3 Match box stands .....           | 24    |
| 3 Soap dishes .....                | 25    |
| 12 Salt shakers .....              | 1 50  |
| 2 Lemon reamers .....              | 40    |
| 12 Dinner plates .....             | 1 25  |
| 4 Jugs .....                       | 60    |
| 3 Tea kettles .....                | 2 70  |
| 1 Sauce pan .....                  | 25    |
| 1 Double boiler .....              | 85    |
| 1 Stove to burn coal or wood ..... | 30 00 |

Total cost, \$98.25. The stove in the above list may be replaced by a \$20.00 wood stove, or by a \$10.00 two-burner coal-oil stove, in which case the total cost becomes \$88.25 or \$78.25.

### *No. 2 Equipment*

A less expensive equipment with which much useful work may be done is as follows:

|                 |                 |                 |
|-----------------|-----------------|-----------------|
| 1 Oil stove     | 1 Toaster       | 24 Teaspoons    |
| 1 Tea kettle    | 2 Asbestos mats | 24 Forks        |
| 1 Saucepan      | 6 Knives        | 2 Wooden spoons |
| 1 Frying pan    | 1 French knife  | 1 Measuring cup |
| 1 Double boiler | 6 Tablespoons   | 1 Strainer      |

|                    |                 |                       |
|--------------------|-----------------|-----------------------|
| 1 Cork screw       | 1 Grater        | 1 Scrub basin         |
| 1 Egg beater       | 1 Salt shaker   | 1 Scrub brush (small) |
| 1 Dover egg beater | 1 Pepper shaker | 3 Dusters             |
| 6 Plates           | 1 Dish pan      | 3 Dish cloths         |
| 2 Granite plates   | 1 Rinsing pan   | 6 Dish towels         |
| 1 Tea pot          | 1 Draining pan  | 3 Scrub cloths        |
| 2 Bowls            | 1 Garbage crock | 1 Pot holder.         |
| 1 Lemon reamer     | 1 Soap dish     |                       |

Estimated cost about \$10 or \$12.

*Sewing Room.*—Where the sewing prescribed in the course of study for the different Forms is taken in the ordinary class room, as will almost invariably be the case, the following equipment will be sufficient for each pupil:

A work box containing scissors, thimble, thread, cushion and pins, needles, measure and emery, and costing from 50c. to 75c. per set, is required. The boxes may be made of millboard, or candy boxes may be used. A special cupboard should be provided for these boxes and the working material. A demonstration frame of coarse canvas and mounted on a stand is also useful to teach the various stitch forms.

## V. REGULATIONS FOR THE ESTABLISHMENT AND MAINTENANCE OF ELEMENTARY MANUAL TRAINING CLASSES IN VILLAGE AND RURAL SCHOOLS

### ESTABLISHMENT, MAINTENANCE, AND LEGISLATIVE GRANTS

The Public or Separate School Board of Trustees of a rural or village school which is unable to avail itself of the provisions of the General Regulations, but which maintains classes in Elementary Manual Training, satisfactory to the Minister of Education, employs a teacher with a Departmental Certificate in this subject, and provides accommodations and equipment satisfactory to the Minister, shall be paid an initial grant not exceeding \$50 and a subsequent annual grant of \$30 for each school approved by the Minister, from any appropriation made by the Legislature for instruction in this subject. In no year, however, shall the Legislative Grant exceed the total expenditure of the Board for these classes.

2. The accounts of the classes in Elementary Manual Training shall be kept separate from the general school expenditure, and the grants made must be expended solely for these classes. The totals of the receipts and expenditures shall, however, be included in the General Financial Statement of the Board to the Department of Education.

3. Much of the work in Elementary Manual Training may be done out of school hours, but a definite place must be provided for all the classes in the time table, satisfactory to the Inspector of Manual Training.

4. On the report of the Inspector of Manual Training that the organization and the teaching are satisfactory, an annual grant of \$30, in addition to the regular salary paid by the School Board, will be paid by the Minister also out of any appropriation made by the Legislature for this purpose, to each legally qualified teacher who holds also a certificate in Manual Training, and who gives instruction in accordance with the regulations of the Department of Education.

5. If in any year the amount voted by the Legislature is insufficient to pay the grants in full or if there is a balance over, the Minister may make a *pro rata* reduction or increase.

6. The foregoing provisions shall not apply to any School receiving grants for Manual Training under the General Regulations. The grants made to them cover the Manual Training of all the Forms.

7. When an equipment on which the Legislative Grant has been paid to its full value remains unused for two years, the Minister may direct the transfer of said equipment to another school in the Province.

### ACCOMMODATIONS

The following description of the Manual Training accommodations

applies to the schools provided for above, the Manual Training of the lower forms being taken at the school desks:

*Wood-working.*—The accommodation may be of three kinds. First, a small room adjoining the school room; second, a part of the school room itself; third, a basement or shed. Where space will permit, provision may be made in the school room by fitting a continuous bench with a top 18 inches in width and about 2 feet 7 inches in height. A length of 8 feet will accommodate five boys working at one time. These benches are best placed under the window.

A chest or cupboard should be provided to hold the above general tools, which should be so placed that their cutting edges are protected.

Before every vacation, both bench and general tools should be wiped with an oily rag and placed carefully away, out of the reach of damp, in order that rust may be avoided. When it is desirable to save space, a tool cupboard may be conveniently fitted within the framing of the bench.

The Board shall also provide facilities for storing the necessary tools, materials, and other requisites.

### EQUIPMENT

1. For the lower forms the equipment should be as follows:—

*Paper Work.*—Pencil, scissors, ruler graduated in inches, halves, quarters, and eighths, millboard for each pupil to protect the desk top, paste or other adhesive, and paper for drawing and construction.

*Cardboard Work.*—In addition, knife, compasses, set square for each pupil, one ticket punch for every five pupils, and cardboard of various weights.

*Knife Work.*—Knife, pencil, ruler, compasses, try square for each pupil, three or four small hammers, two hand screws, oil stone, oil can, and assorted brad-awls for the class, and working material.

2. For the higher forms the equipment should be as follows:

*Wood-working.*—(1) The following set of tools for each bench or bench place:

Bench hook, drawing kit, pair of compasses, rule 2 ft., marking gauge, try square, jack plane, firmer chisel 1-in., firmer chisel,  $\frac{1}{2}$ -in., firmer chisel  $\frac{1}{4}$ -in., tenon saw, bench whisk. Estimated cost, \$5.00.

2. The following general tools:

Smoothing plane, try square 12-in., two screw drivers, two braces with assorted bits, metal and wood countersinks, two gimlets, two brad-awls, one bevel, one mortise gauge, two nail sets, one wood hand screw, one pair pincers, one pair wing dividers, one pair cutting pliers, four hammers, one hatchet, one pad saw, one rip saw, one cross-cut saw, one oilstone. Estimated cost, \$10.50.

In addition to the above general equipment, every school should have a large tee square, two set squares, 45° and 60°, a graduated rule and a pair of compasses for blackboard use.

## VI—TEACHERS' CERTIFICATES IN MANUAL TRAINING AND HOUSEHOLD SCIENCE

### ELEMENTARY CERTIFICATES

1. Elementary certificates in Manual Training and Household Science will be granted by the Department of Education to the following classes of students and on the following conditions:

(1) To Grade A Normal School students who have passed the final examination of the Normal Schools and have taken, from April to the end of June, the prescribed course in Manual Training at the Ontario Agricultural College, Guelph, or in Household Science at the University of Toronto, and have passed the prescribed final examinations.

(2) To other Normal School students who have taken the High School course in Manual Training or in Household Science and have passed the special examination in these subjects at the close of the High School Course, who have passed the Normal School June final examination, who have taken the prescribed Summer School courses in July in Household Science at the University of Toronto, or in Manual Training at the Ontario Agricultural College, Guelph, and who have passed the prescribed final examinations.

(3) To teachers with First, Second, or Third Class certificates who have taken the two prescribed Summer School courses in July in Household Science at the University of Toronto, or in Manual Training at the Ontario Agricultural College, Guelph, with directed Winter's reading courses, and have passed the prescribed final examinations.

### INTERIM ORDINARY CERTIFICATES IN HOUSEHOLD SCIENCE

2. After June, 1913, only the courses in Household Science at the Macdonald Institute, Guelph, will be recognized by the Department of Education for Interim Ordinary certificates in Household Science.

3. Application for admission shall be made to the President of the Ontario Agricultural College, Guelph, not later than September 1st.

4. To be admitted, each applicant shall forward with her application the following certificates:

(1) Her professional First or Second class certificate.

(2) A certificate from a clergyman or other competent authority that she is of good moral character.

(3) A certificate from a physician that she is physically able for the work of a teacher, and, especially, that she is free from serious pulmonary affection and from seriously defective eyesight or hearing.

5.—(1) The course shall extend over one year.

(2) On passing the final examination on the course prescribed, the candidate will be granted an Interim Ordinary certificate.

#### INTERIM SPECIALISTS' CERTIFICATES IN HOUSEHOLD SCIENCE

6. Graduates in Arts in the Department of Household Science of the University of Toronto shall be entitled to an Interim Specialist's certificate in Household Science on completing the professional course at the Faculty of Education.

#### PERMANENT CERTIFICATES IN HOUSEHOLD SCIENCE

7. An Interim Ordinary or Specialist's certificate will be made permanent on the report of the Inspector that the holder has completed satisfactorily two years' service as teacher of Household Science in one or more of the schools of the Provincial system.

#### INTERIM ORDINARY CERTIFICATES IN MANUAL TRAINING

8. The training of teachers of Manual Training is provided for in the Macdonald Institute, Guelph.

9. Application for admission shall be made to the President of the Ontario Agricultural College, Guelph, not later than September 1st.

10. To be admitted, each applicant shall forward the certificates required from applicants for admission to the course in Household Science, as detailed in Reg. 4 above.

11.—(1) The course shall extend over one year.

(2) On passing the final examination on the course prescribed, the candidate will be granted an Ordinary Interim certificate.

#### INTERIM SPECIALISTS' CERTIFICATES IN MANUAL TRAINING

12. The holder of an ordinary certificate in Manual Training who presents evidence of at least one calendar year's employment as a mechanic in a shop shall be granted an Interim Specialist's certificate in Manual Training, the evidence and character of such employment to be satisfactory to the Minister.

#### PERMANENT CERTIFICATES IN MANUAL TRAINING

13.—(1) An Interim Ordinary certificate will be made permanent on the report of the Inspector that the holder has completed satisfactorily at least two years' service as a Manual Training teacher in one or more of the schools of the Provincial system, and has been employed as a mechanic in a shop for at least two months, the evidence and character of such employment to be satisfactory to the Minister.

(2) An Interim Specialist's certificate will be made permanent on the report of the Inspector that the holder has completed satisfactorily two years' service as a teacher in one or more of the schools of the Provincial system.

(3) The employment prescribed in 12 and 13 (1) above may be taken at different times, and before or after the completion of the course at the Macdonald Institute.

#### VALUE OF CERTIFICATES IN HOUSEHOLD SCIENCE AND MANUAL TRAINING

14.—(1) With the approval of the Minister, the Elementary certificates in Manual Training and Household Science shall be valid in Rural or Village Public or Separate Schools where most of the teacher's time is given to the general work of the school programme.

(2) The certificates in the Industrial Arts, granted heretofore, are of the same value as the elementary certificates in Manual Training to be granted under these Regulations.

15. Any person holding an Ordinary or Specialist's certificate in Household Science or Manual Training shall be legally qualified to teach that subject in any of the schools of the Province, but Specialists' shall have the preference in appointments to the staffs of the Collegiate Institutes, and, as soon as the supply is adequate, Specialists alone shall be qualified to hold positions in Collegiate Institutes.

#### EXEMPTIONS

16. The foregoing Regulations in regard to the courses and certificates in Household Science and Manual Training shall not affect the status of any one now qualified as a teacher in either of these departments under the Regulations of the Department of Education, or the claims of any students who have commenced courses under the old regulations, provided they complete them by July, 1913..

**NOTE.**—The Syllabuses of the various courses may be obtained as follows:

From the Registrar of the University of Toronto, the Syllabuses of the Courses for Elementary and for Specialists' Certificates in Household Science; and, from the President of the Ontario Agricultural College, Guelph, the Syllabuses of the courses for all the Certificates in Manual Training and for the ordinary Interim Certificates in Household Science.

#### INSTRUCTIONS AND REGULATIONS

Instructions may be issued by the Minister of Education from time to time to Inspectors or other officers in carrying out the provisions of these Regulations.

All former Regulations of the Department of Education that are inconsistent with these are hereby repealed.



